

## REMARKS

Claims 4-13, 16-21, 23-34, 37-40, 42-45, and 61-71 are pending at the time of the office action. In the Final Office Action mailed on March 25, 2008, the Examiner took the following action: (1) rejected Claims 4-13 and 71 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement; (2) rejected Claims 4-6, 10-11, 16-17, and 71 under 35 U.S.C. §103(a) as being unpatentable over Zheng (U.S. 5,807,430) in view of Shimizu (U.S. 4,374,890), Dow Product Information (Den 425 Epoxy Novolac Resin), and Edelman (U.S. 4,269,759); (3) rejected Claims 7-9 and 12-13 under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, and Edelman, and in further view of Blohowiak (U.S. 5,869,141); (4) rejected Claims 18-19 and 61-62 under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, and Edelman and in further view of Montano (U.S. 6,616,976); (5) rejected Claims 20-21 under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, and Edelman, and in further view of Tola (U.S. 5,049,232); (6) rejected Claim 23 as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, and in further view of Poutasse (U.S. 5,629,028); (7) rejected Claims 24-27 and 31-32 as being unpatentable over Zheng in view of Shimizu, Dow Product Information, and Edelman, and in further view of Vaughn (U.S. 3,967,091), Grylls (U.S. 2002/0192496), and Konieczny (U.S. 6,769,956); (8) rejected Claims 28-30, 33-34, and 43-45 under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny, and in further view of Blohowiak; (9) rejected Claims 37-38, 63-64, and 67-68 under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny, and Blohowiak, and in further view of Montano; (10) rejected Claims 39-40, 66, and 70 under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of

Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny, Blohowiak, and in further view of Tola; and (11) rejected Claims 42, 65, and 69 under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, Konieczny, and Blohowiak, and in further view of Poutasse. Applicants respectfully request entry of the above-proposed amendments, as well as reconsideration of the application in view of the foregoing amendments and the following remarks.

*I. Examiner Interview*

Applicants respectfully express their appreciation to Examiner Sellman for the telephonic interview held on July 14, 2008, during which the Examiner discussed the disposition of this case with the undersigned attorney. During the interview, the Applicants discussed the elements in Claims 4 and 13. Additionally, the Applicants and the Examiner also discussed amendments to the claims that may overcome the cited prior art references.

*II. Rejection under 35 U.S.C. §112, First Paragraph*

Claims 4-13 and 71 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Applicants have amended Claim 4 to recite subject matter that is supported by the Specification. Applicants have also canceled Claim 71. Applicants respectfully request reconsideration and withdrawal of the objections.

*III. Rejections under 35 U.S.C. §103(a)*

Claims 4-6, 10-11, and 71

Claims 4-6, 10-11 and 71 are rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information and Edelman. Claims 5-6 and 10-11 depend from Claim 4. Claim 71 is canceled. Claim 4, as amended, recites:

4. A continuous process for applying a sol-gel coating to a metal material and an adhesive coating onto the sol-gel coating, the process comprising:
  - subjecting the metal material to a caustic solution of sodium hydroxide;
  - rinsing the metal material with water to remove the caustic solution of sodium hydroxide from the metal material;
  - applying a sol-gel coating to the metal material;
  - evaporating the water portion of the sol-gel coating;
  - applying a liquid adhesive coating directly to the sol-gel coating on the metal material wherein the liquid adhesive coating is an epoxy-based adhesive coating including:
    - an epoxy material comprising about 3-35% by wt. liquid diglycidylether of bisphenol-A, about 35-60% by wt. solid diglycidylether of bisphenol-A, about 10-30% by wt. novolac-epoxy, and about 5-18% by wt. carboxy-terminated acrylonitrile-butadiene rubber; and
    - a second curative material comprising about 0-100% by wt. 4,4'-diaminodiphenylsulfone, about 0-100% by wt. and 3,3'-diaminodiphenylsulfone, and about 0-0.2% by wt. chromium octotatate;
  - evaporating the solvent portion of the adhesive coating; and
  - applying a backing film to the adhesive coating*, wherein the backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil. (Emphasis added).

Applicants traverse the rejection. First, Zheng does not recite, “applying a backing film to the adhesive coating, wherein the backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as recited in Claim 4. Instead, Zheng discloses a process for treating metal surfaces with a composition that includes an organoalkoxysilane. (Abstract). However, Zheng is silent with respect to the application of a backing film, as claimed in Claim 4.

Second, the deficiencies of Zheng with respect to this element are not remedied by Shimizu, Dow Product Information, and Edelman. Shimizu discloses a process that involves applying a two component epoxy resin directly onto a metal plate. (Column 2, Lines 46-50). Dow Product information's disclosures are related to the functions of the novolac compound as compared to standard bisphenol-A based liquid epoxy resins. (Dow Product Information, Page 1, Paragraph 2). Edelman discloses the use of chromium octotatate as a catalyst. (Abstract, Column 11, Lines 11-26; Column 12, Lines 26-64). However, the disclosures of Shimizu, Dow Product Information, and Edelman are silent with respect to the application of a backing film, as claimed in Claim 4.

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, and Edelman, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 4. Furthermore, since Claims 5-6 and 10-11 depend from Claim 4, they are at least allowable for the same reason that makes Claim 4 allowable over the cited references, as well as for additional limitations recited in those claims.

#### Claims 16-17

Claims 16-17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information and Edelman. Claim 17 depends from Claim 16. Claim 16 recites:

16. A continuous process for applying an adhesive coating onto a sol-gel coating on a metal material, the process comprising:
  - applying a liquid adhesive coating directly to the sol-gel coating on the metal material, wherein the liquid adhesive coating is an epoxy-based adhesive coating including an epoxy material comprising about 3-35% by wt. liquid diglycidylether of bisphenol-A, about 35-60% by wt. solid diglycidylether of bisphenol-A, about 10-30% by wt. novolac-epoxy, and about 5-18% by wt. carboxy-terminated acrylonitrile-butadiene rubber; and

a second curative material comprising about 0-100% by wt. 4,4'-diaminodiphenylsulfone, about 0-100% by wt. 3,3'-diaminodiphenylsulfone, and about 0-0.2% by wt. chromium octoate;  
evaporating the solvent portion of the adhesive coating; and  
*applying a thermoplastic backing film to the adhesive coating*, wherein the thermoplastic backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil. (Emphasis added).

Applicants traverse the rejection. Specifically, Applicants respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a) to the extent that the claims recite similar features. Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not disclose, teach or fairly suggest, “*applying a thermoplastic backing film to the adhesive coating*, wherein the thermoplastic backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 16. (Emphasis added).

Furthermore, because Claim 17 depends from Claim 16, it is also allowable over the cited references for at least the same reason Claim 16 is allowable, as well as for additional limitations recited.

#### Claims 7-9 and 12-13

Claims 7-9 and 12-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, and Edelman, and in further view of Blohowiak. Claims 7-9 and 12-13 depend from Claim 4.

Applicants traverse the rejection. Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a). Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite,

*“applying a backing film to the adhesive coating, wherein the backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,”* as claimed in Claim 4.

Moreover, the deficiencies of the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Blohowiak. Blohowiak discloses a surface treatment for metal surfaces that includes a sol-gel film to improve adhesion between the metal surface and an organic matrix resin or adhesive. (Column 2, Lines 62-66). However, Blohowiak is silent with respect to the application of a backing film, as claimed in Claim 4.

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, and Blohowiak, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 4. Furthermore, since Claims 7-9 and 12-13 depend from Claim 4, they are at least allowable for the same reason that makes Claim 4 allowable over the cited references, as well as for additional limitations recited in those claims.

#### Claims 18-19 and 61-62

Claims 18-19 and 61-62 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu and Dow Product Information, Edelman, and in further view of Montano. Claims 18-19 and 61-62 depend from Claim 16.

Applicants traverse the rejection. Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a) to the extent that the claims recite similar features. Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite, *“applying a thermoplastic backing film to the adhesive coating, wherein the thermoplastic backing film is configured to prevent the adhesive*

coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 16. (Emphasis added).

Moreover, the deficiencies of the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Montano. Montano discloses that an epoxy resin composition can be applied to a metal by spray coating, dip coating, and roller coating. (Column 9, Lines 41-46). However, Montano is silent with respect to the application of a thermoplastic backing film, as claimed in Claim 16

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, and Montano, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 16. Furthermore, since Claims 18-19 and 61-62 depend from Claim 16, they are at least allowable for the same reason that makes Claim 16 allowable over the cited references, as well as for additional limitations recited in those claims.

#### Claims 20-21

Claims 20-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, and in further view of Tola. Claims 20-21 depend from Claim 16.

Applicants traverse the rejection. Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a) to the extent that the claims recite similar features. Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite, “*applying a thermoplastic backing film to the adhesive coating*, wherein the thermoplastic backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 16. (Emphasis added).

Moreover, the deficiencies of the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Tola. Tola discloses a method for forming a foil/dielectric laminate with an adhesive layer of about 0.4 mils. (Column 3, Lines 44-48). However, Tola is silent with respect to the application of a thermoplastic backing film, as claimed in Claim 16

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, and Tola, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 16. Furthermore, since Claims 20-21 depend from Claim 16, they are at least allowable for the same reason that makes Claim 16 allowable over the cited references, as well as for additional limitations recited in those claims.

#### Claim 23

Claim 23 is rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, and Edelman, and in further view of Poutasse. Claim 23 depend from Claim 16.

Applicants traverse the rejection. Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a) to the extent that the claims recite similar features. Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite, “*applying a thermoplastic backing film to the adhesive coating*, wherein the thermoplastic backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 16. (Emphasis added).

Moreover, the deficiencies of the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Poutasse. Poutasse discloses applying an epoxy adhesive containing acetone to a foil to produce a laminate.



(Column 4, Lines 48-59). However, Poutasse is silent with respect to the application of a thermoplastic backing film, as claimed in Claim 16

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, and Poutasse, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 16. Furthermore, since Claim 23 depends from Claim 16, it is at least allowable for the same reason that makes Claim 16 allowable over the cited references, as well as for additional limitations recited.

#### Claims 24-27 and 31-32

Claims 24-27 and 31-32 were rejected as being unpatentable over Zheng in view of Shimizu, Dow Product Information, and Edelman, and in further view of Vaughn, Grylls, and Konieczny. Claims 25-27 and 31-32 depend from Claim 24. Claim 24, as amended, recites:

24. A continuous surface preparation process for a metal material comprising:
- grit blasting the metal material with a mixture of fine particles of aluminum oxide in air and water, wherein the grit has a mesh size of about 180-320;
  - rinsing the metal material with water to remove the grit;
  - subjecting the metal material to a caustic solution of sodium hydroxide;
  - rinsing the metal material with water to remove the caustic solution of sodium hydroxide;
  - applying a sol-gel coating to the metal material;
  - evaporating the water portion of the sol-gel coating;
  - applying a liquid adhesive coating *directly* to the sol-gel coating on the metal material wherein the liquid adhesive coating is an epoxy-based adhesive coating including:
    - an epoxy material comprising about 3-35% by wt. liquid diglycidylether of bisphenol-A, about 35-60% by wt. solid diglycidylether of bisphenol-A, about 10-30% by wt. novolac-epoxy, and about 5-18% by wt. carboxy-terminated acrylonitrile-butadiene rubber; and
    - a second curative material comprising about 0-100% by wt. 4,4'-diaminodiphenylsulfone, about 0-100% by

wt. 3,3'-diaminodiphenylsulfone, and about 0-0.2%  
by wt. chromium octoate;  
evaporating the solvent portion of the adhesive coating; and  
*applying a polyethylene terephthalate (PET) thermoplastic  
backing film to the adhesive coating*, wherein the PET  
thermoplastic backing film is configured to prevent the  
adhesive coating from sticking to itself when the metal  
material is wound into a coil. (Emphasis added).

Applicants traverse the rejection. Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a) to the extent that the claims recite similar features. Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite, “*applying a polyethylene terephthalate (PET) thermoplastic backing film to the adhesive coating*, wherein the PET thermoplastic backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 24. (Emphasis added).

Moreover, the deficiencies of Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Vaughn, Grylls, and Konieczny. Vaughn discloses a method of weld-bonding that includes grit blasting a titanium alloy with 50 micron alumina. (Column 4, Lines 34-38). Grylls discloses a method for producing a turbine airfoil that is coated with NiAl that involves grit blasting the NiAl coating using alumina particles mixed with compressed air and water vapor. (Paragraph 20). Konieczny discloses that grit blasting may be used to create a roughed surface. (Column 1, Lines 16-24). However, the disclosures of Vaughn, Grylls, and Konieczny are silent with respect to the application of a PET thermoplastic backing film, as claimed in Claim 24.

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 24. Furthermore, since Claims 25-27 and 31-32

depend from Claim 24, they are at least allowable for the same reason that makes Claim 24 allowable over the cited references, as well as for additional limitations recited in those claims.

Claims 28-30 and 33-34

Claims 28-30 and 33-34 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny, and in further view of Blohowiak. Applicants traverse the rejection.

Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a) to the extent that the claims recite similar features. Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite, “*applying a polyethylene terphthalate (PET) thermoplastic backing film to the adhesive coating*, wherein the PET thermoplastic backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 24. (Emphasis added).

Moreover, the deficiencies of Zheng, Shimizu, Dow Product Information, and Edelman with respect to this element are not remedied by Vaughn, Grylls, Konieczny, and Blohowiak. Vaughan discloses a method of weld-bonding that includes grit blasting a titanium alloy with 50 micron alumina. (Column 4, Lines 34-38). Grylls discloses a method for producing a turbine airfoil that is coated with NiAl that involves grit blasting the NiAl coating using alumina particles mixed with compressed air and water vapor. (Paragraph 20). Konieczny discloses that grit blasting may be used to create a roughed surface. (Column 1, Lines 16-24). Blohowiak discloses a surface treatment for metal surfaces that includes a sol-gel film to improve adhesion between the metal surface and an organic matrix resin or adhesive. (Column 2, Lines 62-66). However, the disclosures of Vaughn, Grylls, Konieczny, and Blohowiak are silent with respect to the application of a PET thermoplastic backing film, as claimed in Claim 24.

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, Konieczny, and Blohowiak, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 24. Furthermore, since Claims 25-27 and 31-32 depend from Claim 24, they are at least allowable for the same reason that makes Claim 24 allowable over the cited references, as well as for additional limitations recited in those claims.

#### Claims 43-44

Claims 43-44 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny, and in further view of Blohowiak. Claim 44 depends from Claim 43. Claim 43, as amended, recites:

43. A continuous surface preparation process for a metal material, said process comprising:
  - grit blasting the metal material with a mixture of fine particles of aluminum oxide in air and water, wherein the grit has a mesh size of about 180-320;
  - rinsing the metal material with water to remove the grit;
  - subjecting the metal material to a caustic solution of sodium hydroxide wherein the caustic solution of sodium hydroxide has a concentration of about 10-50% by weight sodium hydroxide;
  - rinsing the metal material with water to remove the caustic solution of sodium hydroxide from the metal material;
  - applying a sol-gel coating to the metal material wherein the sol-gel is a mixture of a zirconium alkoxide, 3-glycidoxypropyltrimethoxysilane, glacial acetic acid, and a surfactant;
  - evaporating the water portion of the sol-gel coating;
  - applying a liquid adhesive coating directly to the sol-gel coating on the metal material wherein the liquid adhesive coating is an epoxy-based adhesive coating including:
    - an epoxy material comprising about 3-35% by wt. liquid diglycidylether of bisphenol-A, about 35-60% by wt. solid diglycidylether of bisphenol-A, about 10-30% by wt. novolac-epoxy, and about 5-

18% by wt. carboxy-terminated acrylonitrile-butadiene rubber; and  
a second curative material comprising about 0-100% by wt. 4,4'-diaminodiphenylsulfone, about 0-100% by wt. 3,3'-diaminodiphenylsulfone, and about 0-0.2% by wt. chromium octotrate;  
evaporating the solvent portion of the adhesive coating; and  
*applying a backing film to the adhesive coating*, wherein the backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil. (Emphasis added).

Applicants traverse the rejection. Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a). Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite, “*applying a backing film to the adhesive coating*, wherein the backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 43. (Emphasis added).

Moreover, the deficiencies of Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Vaughn, Grylls, Konieczny, and Blohowiak. Vaughan discloses a method of weld-bonding that includes grit blasting a titanium alloy with 50 micron alumina. (Column 4, Lines 34-38). Grylls discloses a method for producing a turbine airfoil that is coated with NiAl that involves grit blasting the NiAl coating using alumina particles mixed with compressed air and water vapor. (Paragraph 20). Konieczny discloses that grit blasting may be used to create a roughed surface. (Column 1, Lines 16-24). Blohowiak discloses a surface treatment for metal surfaces that includes a sol-gel film to improve adhesion between the metal surface and an organic matrix resin or adhesive. (Column 2, Lines 62-66). However, the disclosures of Vaughn, Grylls, Konieczny, and Blohowiak are silent with respect to the application of a backing film, as claimed in Claim 43.

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, Konieczny, and Blohowiak, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 43. Furthermore, since Claim 44 depends from Claim 43, it is at least allowable for the same reason that makes Claim 43 allowable over the cited references, as well as for additional limitations recited.

#### Claim 45

Claim 45 is rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny, and in further view of Blohowiak. Claim 45, as amended, recites:

45. A continuous surface preparation process for titanium foil material, said process comprising:
- grit blasting the titanium foil with a mixture of fine particles of aluminum oxide in air and water, wherein the grit has a mesh size of about 280;
  - rinsing the foil with water to remove the grit from the foil;
  - subjecting the foil material to a caustic solution of sodium hydroxide wherein the caustic solution of sodium hydroxide has a concentration of about 25% by weight sodium hydroxide;
  - rinsing the foil with water to remove the caustic solution of sodium hydroxide from the foil;
  - applying a sol-gel coating to the foil wherein the sol-gel is a mixture of a zirconium n-propoxide 3-glycidoxypropyltrimethoxysilane, glacial acetic acid, and a surfactant;
  - evaporating the water portion of the sol-gel coating;
  - applying a liquid adhesive coating directly to the sol-gel coating on the foil wherein the liquid adhesive coating is an epoxy-based adhesive coating including:
    - an epoxy material comprising about 3-35% by wt. liquid diglycidylether of bisphenol-A, about 35-60% by wt. solid diglycidylether of bisphenol-A, about 10-30% by wt. novolac-epoxy, and about 5-18% by wt. carboxy-terminated acrylonitrile-butadiene rubber; and

a second curative material comprising about 0-100% by wt. 4,4'-diaminodiphenylsulfone, about 0-100% by wt. 3,3'-diaminodiphenylsulfone, and about 0-0.2% by wt. chromium octoate;  
evaporating the solvent portion of the adhesive coating; and  
*applying a thermoplastic backing film to the adhesive coating*, wherein the thermoplastic backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil. (Emphasis added).

Applicants traverse the rejection. Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a). Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, Dow Product Information, and Edelman, whether individually or in combination, do not recite, “*applying a thermoplastic backing film to the adhesive coating*, wherein the thermoplastic backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 45. (Emphasis added).

Moreover, the deficiencies of Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Vaughn, Grylls, Konieczny, and Blohowiak. Vaughn discloses a method of weld-bonding that includes grit blasting a titanium alloy with 50 micron alumina. (Column 4, Lines 34-38). Grylls discloses a method for producing a turbine airfoil that is coated with NiAl that involves grit blasting the NiAl coating using alumina particles mixed with compressed air and water vapor. (Paragraph 20). Konieczny discloses that grit blasting may be used to create a roughed surface. (Column 1, Lines 16-24). Blohowiak discloses a surface treatment for metal surfaces that includes a sol-gel film to improve adhesion between the metal surface and an organic matrix resin or adhesive. (Column 2, Lines 62-66). However, the disclosures of Vaughn, Grylls, Konieczny, and Blohowiak are silent with respect to the application of a backing film, as claimed in Claim 43.

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, Konieczny, and Blohowiak, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 45.

#### Claims 37-38

Claims 37-38 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, Konieczny, and Blohowiak, and in further view of Montano. Claims 37-38 depend from Claim 24. Applicants traverse the rejection.

Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a) to the extent that the claims recite similar features. Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite, “*applying a polyethylene terphthalate (PET) thermoplastic backing film to the adhesive coating*, wherein the PET thermoplastic backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 24. (Emphasis added).

Moreover, the deficiencies of Zheng, Shimizu, Dow Product Information, and Edelman with respect to this element are not remedied by Vaughn, Grylls, Konieczny, Blohowiak, and Montano. Vaughan discloses a method of weld-bonding that includes grit blasting a titanium alloy with 50 micron alumina. (Column 4, Lines 34-38). Grylls discloses a method for producing a turbine airfoil that is coated with NiAl that involves grit blasting the NiAl coating using alumina particles mixed with compressed air and water vapor. (Paragraph 20). Konieczny discloses that grit blasting may be used to create a roughed surface. (Column 1, Lines 16-24). Blohowiak discloses a surface treatment for metal surfaces that includes a sol-gel film to improve adhesion between the metal surface and an organic matrix resin or adhesive. (Column 2,



Lines 62-66). Montano discloses that an epoxy resin composition can be applied to a metal by spray coating, dip coating, and roller coating. (Column 9, Lines 41-46). However, the disclosures of Vaughn, Grylls, Konieczny, Blohowiak, and Montano are silent with respect to the application of a PET thermoplastic backing film, as claimed in Claim 24.

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, Konieczny, Blohowiak, and Montano, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 24. Furthermore, since Claims 37-38 depend from Claim 24, they are at least allowable for the same reason that makes Claim 24 allowable over the cited references, as well as for additional limitations recited in those claims.

#### Claims 63-64

Claims 63-64 under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny, and Blohowiak, and in further view of Montano. Claims 63-64 and 67-68 depend from Claim 43. Applicants traverse the rejection.

Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a) to the extent that the claims recite similar features. Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite, “*applying a backing film to the adhesive coating*, wherein the backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 43. (Emphasis added).

Moreover, the deficiencies of Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Vaughn, Grylls, Konieczny, Blohowiak, and Montano. Vaughan discloses a method of weld-bonding that includes grit

blasting a titanium alloy with 50 micron alumina. (Column 4, Lines 34-38). Grylls discloses a method for producing a turbine airfoil that is coated with NiAl that involves grit blasting the NiAl coating using alumina particles mixed with compressed air and water vapor. (Paragraph 20). Konieczny discloses that grit blasting may be used to create a roughed surface. (Column 1, Lines 16-24). Blohowiak discloses a surface treatment for metal surfaces that includes a sol-gel film to improve adhesion between the metal surface and an organic matrix resin or adhesive. (Column 2, Lines 62-66). Montano discloses that an epoxy resin composition can be applied to a metal by spray coating, dip coating, and roller coating. (Column 9, Lines 41-46). However, the disclosures of Vaughn, Grylls, Konieczny, Blohowiak, and Montano are silent with respect to the application of a backing film, as claimed in Claim 43.

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, Konieczny, Blohowiak, and Montano, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 43. Furthermore, since Claims 63-64 depend from Claim 43, they are at least allowable for the same reason that makes Claim 43 allowable over the cited references, as well as for additional limitations recited in those claims.

#### Claims 67-68

Claims 67-68 under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny, Blohowiak, and in further view of Montano. Claims 67-68 depend from Claim 45. Applicants traverse the rejection.

Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a) to the extent that the claims recite similar features. Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, Dow Product Information, and Edelman, whether individually or in combination, do

not recite, “*applying a backing film to the adhesive coating*, wherein the backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 45. (Emphasis added).

Moreover, the deficiencies of Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Vaughn, Grylls, Konieczny, Blohowiak, and Montano. Vaughan discloses a method of weld-bonding that includes grit blasting a titanium alloy with 50 micron alumina. (Column 4, Lines 34-38). Grylls discloses a method for producing a turbine airfoil that is coated with NiAl that involves grit blasting the NiAl coating using alumina particles mixed with compressed air and water vapor. (Paragraph 20). Konieczny discloses that grit blasting may be used to create a roughed surface. (Column 1, Lines 16-24). Blohowiak discloses a surface treatment for metal surfaces that includes a sol-gel film to improve adhesion between the metal surface and an organic matrix resin or adhesive. (Column 2, Lines 62-66). Montano discloses that an epoxy resin composition can be applied to a metal by spray coating, dip coating, and roller coating. (Column 9, Lines 41-46). However, the disclosures of Vaughn, Grylls, Konieczny, Blohowiak, and Montano are silent with respect to the application of a backing film, as claimed in Claim 43.

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, Konieczny, Blohowiak, and Montano, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 43. Furthermore, since Claims 63-64 depend from Claim 43, they are at least allowable for the same reason that makes Claim 43 allowable over the cited references, as well as for additional limitations recited in those claims.

#### Claims 39-40

Claims 39-40 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny,

Blohowiak, and in further view of Tola. Claims 39-40 depend from Claim 24. Applicants traverse the rejection.

Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a) to the extent that the claims recite similar features. Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite, “*applying a polyethylene terphthalate (PET) thermoplastic backing film to the adhesive coating*, wherein the PET thermoplastic backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 24. (Emphasis added).

Moreover, the deficiencies of Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Vaughn, Grylls, Konieczny, Blohowiak, and Tola. Vaughan discloses a method of weld-bonding that includes grit blasting a titanium alloy with 50 micron alumina. (Column 4, Lines 34-38). Grylls discloses a method for producing a turbine airfoil that is coated with NiAl that involves grit blasting the NiAl coating using alumina particles mixed with compressed air and water vapor. (Paragraph 20). Konieczny discloses that grit blasting may be used to create a roughed surface. (Column 1, Lines 16-24). Blohowiak discloses a surface treatment for metal surfaces that includes a sol-gel film to improve adhesion between the metal surface and an organic matrix resin or adhesive. (Column 2, Lines 62-66). Tola discloses a method for forming a foil/dielectric laminate with an adhesive layer of about 0.4 mils. (Column 3, Lines 44-48). However, the disclosures of Vaughn, Grylls, Konieczny, Blohowiak, and Tola are silent with respect to the application of a PET thermoplastic backing film, as claimed in Claim 24.

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, Konieczny, Blohowiak, and Tola, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 24. Furthermore, since Claims

39-40 depend from Claim 24, they are at least allowable for the same reason that makes Claim 24 allowable over the cited references, as well as for additional limitations recited in those claims.

#### Claim 66

Claim 66 was rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny, Blohowiak, and in further view of Tola. Claim 66 depends from Claim 43.

Applicants traverse the rejection. Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a). Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite, “*applying a backing film to the adhesive coating*, wherein the backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 43. (Emphasis added).

Moreover, the deficiencies of Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Vaughn, Grylls, Konieczny, Blohowiak, and Tola. Vaughan discloses a method of weld-bonding that includes grit blasting a titanium alloy with 50 micron alumina. (Column 4, Lines 34-38). Grylls discloses a method for producing a turbine airfoil that is coated with NiAl that involves grit blasting the NiAl coating using alumina particles mixed with compressed air and water vapor. (Paragraph 20). Konieczny discloses that grit blasting may be used to create a roughed surface. (Column 1, Lines 16-24). Blohowiak discloses a surface treatment for metal surfaces that includes a sol-gel film to improve adhesion between the metal surface and an organic matrix resin or adhesive. (Column 2, Lines 62-66). Tola discloses a method for forming a foil/dielectric laminate with an adhesive layer of about 0.4 mils. (Column 3, Lines 44-48). However, the disclosures of Vaughn, Grylls,

Konieczny, Blohowiak, and Tola are silent with respect to the application of a backing film, as claimed in Claim 43.

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, Konieczny, Blohowiak, and Tola, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 43. Furthermore, since Claim 66 depends from Claim 43, it is at least allowable for the same reason that makes Claim 43 allowable over the cited references, as well as for additional limitations recited.

#### Claim 70

Claim 70 was rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny, Blohowiak, and in further view of Tola. Claim 70 depends from Claim 45.

Applicants traverse the rejection. Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a). Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite, “*applying a thermoplastic backing film to the adhesive coating*, wherein the thermoplastic backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 45. (Emphasis added).

Moreover, the deficiencies of Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Vaughn, Grylls, Konieczny, Blohowiak, and Tola. Vaughan discloses a method of weld-bonding that includes grit blasting a titanium alloy with 50 micron alumina. (Column 4, Lines 34-38). Grylls discloses a method for producing a turbine airfoil that is coated with NiAl that involves grit blasting the NiAl coating using alumina particles mixed with compressed air and water vapor. (Paragraph 20). Konieczny discloses that grit blasting may be used to create a roughed surface. (Column 1, Lines 16-24).

Blohowiak discloses a surface treatment for metal surfaces that includes a sol-gel film to improve adhesion between the metal surface and an organic matrix resin or adhesive. (Column 2, Lines 62-66). Tola discloses a method for forming a foil/dielectric laminate with an adhesive layer of about 0.4 mils. (Column 3, Lines 44-48). However, the disclosures of Vaughn, Grylls, Konieczny, Blohowiak, and Tola are silent with respect to the application of a backing film, as claimed in Claim 45.

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, Konieczny, Blohowiak, and Tola, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 45. Furthermore, since Claim 70 depends from Claim 45, it is at least allowable for the same reason that makes Claim 45 allowable over the cited references, as well as for additional limitations recited.

#### Claim 42

Claim 42 was rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny, Blohowiak, and in further view of Poutasse. Claim 42 depends from 24.

Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a) to the extent that the claims recite similar features. Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite, “*applying a polyethylene terphthalate (PET) thermoplastic backing film to the adhesive coating*, wherein the PET thermoplastic backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 24. (Emphasis added).

Moreover, the deficiencies of Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Vaughn, Grylls, Konieczny,

Blohowiak, and Poutasse. Vaughan discloses a method of weld-bonding that includes grit blasting a titanium alloy with 50 micron alumina. (Column 4, Lines 34-38). Grylls discloses a method for producing a turbine airfoil that is coated with NiAl that involves grit blasting the NiAl coating using alumina particles mixed with compressed air and water vapor. (Paragraph 20). Konieczny discloses that grit blasting may be used to create a roughed surface. (Column 1, Lines 16-24). Blohowiak discloses a surface treatment for metal surfaces that includes a sol-gel film to improve adhesion between the metal surface and an organic matrix resin or adhesive. (Column 2, Lines 62-66). Poutasse discloses applying an epoxy adhesive containing acetone to a foil to produce a laminate. (Column 4, Lines 48-59). However, the disclosures of Vaughn, Grylls, Konieczny, Blohowiak, and Poutasse are silent with respect to the application of a PET thermoplastic backing film, as claimed in Claim 24.

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, Konieczny, Blohowiak, and Poutasse, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 24. Furthermore, since Claim 42 depends from Claim 24, it is at least allowable for the same reason that makes Claim 24 allowable over the cited references, as well as for additional limitations recited.

#### Claim 65

Claim 65 was rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny, Blohowiak, and in further view of Poutasse. Claim 65 depends from 43.

Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a) to the extent that the claims recite similar features. Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite, “*applying a backing film to the adhesive coating*, wherein the backing film is



configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,” as claimed in Claim 43. (Emphasis added).

Moreover, the deficiencies of Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Vaughn, Grylls, Konieczny, Blohowiak, and Poutasse. Vaughn discloses a method of weld-bonding that includes grit blasting a titanium alloy with 50 micron alumina. (Column 4, Lines 34-38). Grylls discloses a method for producing a turbine airfoil that is coated with NiAl that involves grit blasting the NiAl coating using alumina particles mixed with compressed air and water vapor. (Paragraph 20). Konieczny discloses that grit blasting may be used to create a roughed surface. (Column 1, Lines 16-24). Blohowiak discloses a surface treatment for metal surfaces that includes a sol-gel film to improve adhesion between the metal surface and an organic matrix resin or adhesive. (Column 2, Lines 62-66). Poutasse discloses applying an epoxy adhesive containing acetone to a foil to produce a laminate. (Column 4, Lines 48-59). However, the disclosures of Vaughn, Grylls, Konieczny, Blohowiak, and Poutasse are silent with respect to the application of a backing film, as claimed in Claim 43.

Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, Konieczny, Blohowiak, and Poutasse, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 43. Furthermore, since Claim 65 depends from Claim 43, it is at least allowable for the same reason that makes Claim 43 allowable over the cited references, as well as for additional limitations recited.

#### Claim 69

Claim 69 was rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng in view of Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, and Konieczny, Blohowiak, and in further view of Poutasse. Claim 69 depends from 45.

Applicants traverse the rejection. Specifically, Applicants hereby respectfully incorporate the reasoning presented above in response to the rejection of Claim 4 under 35 U.S.C. §103(a). Accordingly, Applicants respectfully submit that the cited references to Zheng, Shimizu, and Dow Product Information, and Edelman, whether individually or in combination, do not recite, “*applying a thermoplastic backing film to the adhesive coating, wherein the thermoplastic backing film is configured to prevent the adhesive coating from sticking to itself when the metal material is wound into a coil,*” as claimed in Claim 45. (Emphasis added).

Moreover, the deficiencies of Zheng, Shimizu, and Dow Product Information, and Edelman with respect to this element are not remedied by Vaughn, Grylls, Konieczny, Blohowiak, and Poutasse. Vaughn discloses a method of weld-bonding that includes grit blasting a titanium alloy with 50 micron alumina. (Column 4, Lines 34-38). Grylls discloses a method for producing a turbine airfoil that is coated with NiAl that involves grit blasting the NiAl coating using alumina particles mixed with compressed air and water vapor. (Paragraph 20). Konieczny discloses that grit blasting may be used to create a roughed surface. (Column 1, Lines 16-24). Blohowiak discloses a surface treatment for metal surfaces that includes a sol-gel film to improve adhesion between the metal surface and an organic matrix resin or adhesive. (Column 2, Lines 62-66). Poutasse discloses applying an epoxy adhesive containing acetone to a foil to produce a laminate. (Column 4, Lines 48-59). However, the disclosures of Vaughn, Grylls, Konieczny, Blohowiak, and Poutasse are silent with respect to the application of a thermoplastic backing film, as claimed in Claim 45.

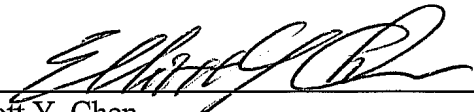
Therefore, the cited references to Zheng, Shimizu, Dow Product Information, Edelman, Vaughn, Grylls, Konieczny, Blohowiak, and Tola, whether individually or in combination, do not teach, disclose or fairly suggest the process recited in Claim 45. Furthermore, since Claim 69 depends from Claim 45, it is at least allowable for the same reason that makes Claim 45 allowable over the cited references, as well as for additional limitations recited.

### CONCLUSION

Applicants respectfully request that the above-proposed amendments be entered and that pending Claims 4-13, 16-21, 23-34, 37-40, 42-45, and 61-70 be allowed. If there are any remaining matters that may be handled by telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

Respectfully Submitted,

Dated: 7-23-08

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